STATE OF COLORADO

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Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

September 12, 2000

Ms. Bonita Lavelle
EPA Region 8
999 18th Street, Suite 500
Denver, CO 80202-2466

Re: Draft Baseline Human Health Risk Assessment
Vasquez Boulevard and I-70 Superfund Site, Denver, Colorado

Dear Ms. Lavelle:

The Colorado Department of Public Health and Environment (CDPHE) has received and reviewed the above-referenced document. Our comments follow. Please note that many sections of this document have been reviewed previously as part of the materials distributed by EPA to the Working Group. Some of our previous comments have not been addressed in the current draft documents (such as use of EPA Region III comparison values for the COC selection process), however we have not reiterated those comments here.

General Comments:

1. Discussions in the risk assessment of arsenic risk levels should include information about background levels of risk associated with concentrations of arsenic in soil that would be typical of an uncontaminated neighborhood. This information is particularly important to provide some perspective when presenting the percent of homes exceeding a 1E-05 risk for different communities in the study area (for example, see Table ES-2) and when presenting cancer risk maps (see Figure 4-1).

2. Sub-acute exposure to arsenic has been assessed based on direct use of a LOAEL (LOAEL = 0.05 mg/kg-day based on studies referenced on page 36 of the risk assessment) as the sub-acute oral reference dose. No uncertainty factors have been applied to adjust the LOAEL to account for possible differences in toxicity to sensitive populations or for general weakness in the database available. This is contrary to standard EPA methodology recommended for derivation of chronic or acute reference toxicity values. The toxicity value adopted should include consideration of standard uncertainty factors.

3. The exposure frequency chosen to assess the potential for sub-acute risk is ½ (i.e., assumes a child may be exposed 1 out of 2 days – see page 35 of the risk assessment). As discussed previously by the working group, the soil intake rate and exposure frequency assumptions for these shorter-term exposures are highly uncertain. If, as stated on page 36 of the risk assessment, the data do not support quantitative assessment of a one day (acute) event, ("... No reliable estimate of an acute (single dose) RfD is available..."), it seems unlikely that the data are sufficient to quantify a two-day exposure. It would be preferable to minimize the uncertainty in the shorter-term risk estimates by matching the exposure frequency assumed in the risk assessment to the actual time period of exposure in the study selected as the basis of the sub-acute RfD.

4. The RBA derived from the swine study is based on site soils from five locations within the VB-I70 study area. While these data do probably provide a more precise estimate of absorption of arsenic from site soils than do studies based on exposure to arsenic in drinking water, it is not necessarily the case that this information should be extrapolated to absorption of dust. Potential chemical and physical differences between soil and dust, such as solubility and particle size, which may affect absorption rates and resuspension rates, have not been characterized. Applying the RBA to dust as well as soil is a very broad extrapolation of the swine study data which is highly uncertain. The RBA-adjusted reference dose value should be applied to the soil dose estimate only and not to the dust exposure dose. Also, see specific comment #11 regarding the application of the RBA results derived from the swine study.

5. Vegetable data should be reassessed using more precise vegetable-specific intake rates for the two properties where the screening calculations indicate a potential excess risk (i.e., properties 6 and 11). Because it will be difficult to determine whether the two high arsenic values- for one garlic sample and one onion sample- are due to soil contamination of the vegetable sample analyzed by the lab, as the working group has speculated, it is important to present a more realistic risk estimate to determine whether further investigation of this issue is required.

6. As discussed in section 5 of the risk assessment, the estimate of risk from lead in soil is highly uncertain, as seen in the discrepancy in results for the two lead models presented in the risk assessment. As discussed at the last technical working group meeting, the precision of the lead risk predictive model could be improved by incorporating additional site-specific data, such as the GSD value, which is a sensitive input to the lead model. A preliminary review of blood lead screening data for residents in theVB/I70 study area, available from various state lead surveillance programs, indicates that there may be a substantial number of homes where paired blood lead data and soil lead data are available. As shown on page 43 of the risk assessment, relatively little paired blood lead and soil lead data were available for consideration in the draft risk assessment. Site-specific blood lead results could be used to help address the discrepancy in the two lead models and to help reduce the uncertainty regarding the impact of soil lead concentration on blood lead levels for

this community. CDPHE would be happy to work with EPA and the working group to provide paired blood lead and soil lead data in a format that protects the confidentiality of those tested and is also useful to reducing the uncertainty in lead risk estimates.

7. As explained in previous risk assessment discussions with the working group members, EPA's risk assessment will be used to guide remedial options considered in the FS, including a possible "public health" alternative which considers health concerns specific to the VB-I70 area, such as cumulative health risk and EJ concerns. To meet this goal, the risk assessment needs a more in-depth uncertainty analysis to address additional arsenic sensitivity which may occur at this site due to established risk factors for increased arsenic toxicity such as poor nutrition, or lowered methylation capacity.

Specific Comments:

1. Page ES-1 (and Figure 1-1 Site Map Please revise the map to eliminate the South Globeville area .

2. Page ES-8, *Risk Characterization for Arsenic* – This section should include some discussion of background level risks. See general comment 1, above.

3. Page ES-9, *Noncancer Risks from Short-Term Exposures* –See general comment 3, above, regarding the basis of selecting exposure frequency values for sub-chronic and sub-acute exposure scenarios. Also see general comment 2, regarding the sub-acute RfD value (5E-02 mg/kg-day).

4. Page ES-14, *Conclusions* - The last sentence of this section ("...The pattern of properties with lead contamination does not appear to be closely linked to those that are impacted by arsenic.") should be modified. To be consistent with conclusions on pages ES-5, ES-14 (second full paragraph), and page 6, the conclusion should indicate that (a) there is only a weak correlation between the occurrence of elevated arsenic and lead concentrations in soil, which indicates that the source of these two chemicals is not likely to be the same, but that (b) there is a similar spatial distribution seen for both lead and arsenic at individual impacted properties, with an apparent boundary effect between the impacted property and the adjacent property.

5. Table ES-1 – For clarity, it would be helpful to add a footnote to indicate that the Globeville data (N=22) summarized in this table was collected from areas south of I-70 and west of I-25, if that is the case.

6. Tables ES-2, ES-3, and ES-4 – These tables need to include footnotes describing the terms used in the various column headings (such as CTE, RME, P10).

7. Page 7, section 2.3.3, *Biomonitoring* – As discussed in previous comments submitted on arsenic biomonitoring issues, CDPHE does not agree that the reference value for arsenic

in hair shown in the table at the bottom of this page is representative of typical values in an unexposed U.S. population.

8. Page 14, section 2.6.2, *Residential Dust Sampling*, 2nd paragraph – Please add that individuals living in the two homes with high dust lead concentrations were contacted by a health care worker to discuss the possible source of lead dust in their home and that families were offered blood lead testing.

9. Page 16, 1st full paragraph – Soils data for school S12 are discussed in this section of the text, but the data are not included in the summary in Table 2-5.

10. Page 19, section 3.2.2, *Workplace Exposures* - Appendix C provides a reasonable screening approach for assessing worker exposure, however it is not typical to use an average exposure point concentration for such a screening calculation. Rather, a maximum soil concentration would typically be used for screening purposes. Also, the rationale for not assessing this potential exposure pathway due to results of soil sampling at commercial/industrial properties in the vicinity of the Globe plant is questionable, given the uncertainty of a common source of arsenic for these two areas.

11. Page 30, section 4.3.2 , *Toxicity Summary for Arsenic – Beneficial Effects*, 2nd paragraph, 1st sentence – The conclusion in the second paragraph ("If arsenic is beneficial or essential in animals, it is also likely to be so for humans") seems speculative, given the observed differences in arsenic toxicity for animals versus humans and the lack of testing for essentiality in humans. This sentence should be deleted.

12. Page 31 Section 4.3.3. *Adjustments for Relative Bioavailability*. – Because fairly large (2 to 3-fold) unexplained differences were seen in RBA values for the 5 different test materials used in the swine study, use of a single site-wide average RBA is questionable. EPA should consider applying an area-specific RBA or using the 95%UCL of the maximum RBA value of 0.43 (from test material 2).

13. Page 35 – See general comment # 3 regarding exposure frequency (EF) assumptions.

14. Page 36 – See general comment 2, regarding use of a LOAEL value for a sub-acute RfD.

Thank you for providing the opportunity to comment on this document. Please do not hesitate to contact me at (303) 692-3395 or Jane Mitchell at (303) 692-2644 if you have any questions.

Sincerely,

Barbara O'Grady

Barbara O'Grady
State Project Manager

cc: VB/I-70 Working Group
File VAS 4.1.0